EXHIBIT A

CATAWBA VALLEY
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NC Firm No. C-3833
SC Firm No. 5201

July 15, 2021

Mr. Keith Buchanan
194 Treasure Valley Drive
Nebo, NC 28761
keith@aplusnetworking.com

Re: Limited Subsurface Exploration & Ground Penetrating Radar Scan
194 Treasure Valley Drive
Nebo, North Carolina
CVET Project No.: 21-753

Dear Mr. Buchanan,

Per your request, Catawba Valley Engineering and Testing (CVET) has performed a limited subsurface exploration and ground penetrating radar (GPR) scan at the subject site. The purpose of our exploration was to evaluate the subsurface conditions adjacent the existing masonry foundation walls as well as determine the reinforcement and/or grout placement within the masonry units. This report includes our understanding of the project, a description of the work performed including our results, and our conclusions and remedial recommendations.

PROJECT BACKGROUND

An initial site visit was performed by CVET personnel on June 17, 2021. This project consists of the evaluation of subsurface soil conditions supporting the existing foundations to aid in the design of remedial repairs. The living area of the home consists of a crawl space with 8 inch concrete masonry units (CMU) as the foundation walls and piers. The garage has a slab on grade system with conventional foundations. It is our understanding that construction of the home was completed approximately 16 months prior to this evaluation. It is also our understanding that noticeable damages were observed within one month of occupancy. Damages consist of but not limited to: sheetrock cracking, molding separating from the wall and ceiling, doors not shutting, and the masonry foundation cracking around the entire house.

At the time of this report, no construction drawings were provided.

FIELD EXPLORATION

Ground Penetrating Radar Scan

On July 2, 2021 Ground Penetrating Radar Services (GPRS) visited the site to perform masonry wall scanning and utility locating. GPRS first scanned all boring locations to determine any utility conflicts in proximity to the proposed hand auger borings. GPRS then scanned the masonry foundations walls to determine the locations of horizontal and vertical reinforcement as well as determine what cells were grouted solid.

Hand Auger and Dynamic Cone Penetration Testing

Hand auger soil test borings were performed on July 2, 2021. On this date CVET personnel performed four (4) hand auger borings at the approximate locations displayed on the attached Boring Location Plan (HA-1 through HA-4). The bore holes were advanced utilizing a hand auger having a three-inch diameter hollow bucket auger with sharpened blades into the soil. Samples of the cuttings were collected from each boring and visually classified. The borings were advanced to a maximum depth of 3.0 feet below existing site grades. The boreholes were backfilled with auger cuttings upon completion and the site was cleaned as best possible prior to demobilization.

In addition, Dynamic Cone Penetrometer (DCP) tests were performed at 1 foot intervals in general accordance with the procedures of ASTM Special Technical Publication No. 399. This test consists of using a 15-lb steel mass which falls 20-in to strike an anvil to penetrate a 1.5-in diameter 45 degree cone that has been seated in the bottom of a hand augured hole. The blows required to achieve penetration increments of 1-3/4-in are recorded three times at approximate 1 foot intervals in each boring location to evaluate soil consistency.

FINDINGS

Ground Penetrating Radar Scan

Due to the cracking and distress observed in the masonry foundation walls, GPRS performed a complete scan of all of the exterior CMU units to determine reinforcement location and spacing.

The wall scan indicated only one row of horizontal joint reinforcement was observed and it was located in the east foundation wall. No horizontal reinforcement was observed within the remaining foundation walls. No vertical reinforcement was observed during the scan within any of the foundation walls. The scan also indicated that none of the CMU units were filled with grout, below or above grade.

Hand Auger and Dynamic Cone Penetration Testing

Hand auger borings encountered fill soils underlain by residual soils. Borings HA-1 and HA-4 were completed within landscape areas just outside of the perimeter footings.

Surficial fill soils were encountered to depths ranging from approximately 2.0 to 2.5 feet below existing site grades. The fill soils consist of dry to moist, micaceous silty sand (SM). Blow counts obtained from DCP testing within the fill soils range from 4 to 10 blows per 1-3/4 inch increment, indicating loose to medium dense cohesionless soil consistencies.

Residual soils were encountered underlying the existing fill. Residual soils are the result of in-place chemical weathering of the parent bedrock. The residuum mainly consist of moist, tan brown to red brown, silty sand (SM) with rock fragments. Blow counts obtained from DCP testing within the residual soils range from 8 to 20+ blows per 1-3/4 inch increment, indicating medium dense to very dense cohesionless soil consistencies.

CONCLUSIONS, AND RECOMMENDATIONS

Perimeter Foundations

Based upon the encountered subsurface conditions, we believe the foundation soils for the load bearing foundation walls is capable of providing an allowable net bearing capacity of up to 2,000 pounds per square foot (psf). At the time of this report, the allowable bearing capacity required for the structural loading of the subject residence is unknown.

Masonry Foundation Walls

Very minimal horizontal reinforcement was observed, no vertical reinforcement was observed, and no CMU cells appear to be grout filled. Based upon our observations, we believe that the minimum reinforcement required based on the NC Residential Building Code was not met.

The focus of this exploration was only on the masonry foundation walls and the foundation subgrade soil. Due to the poor construction practices observed on site, we anticipate further structural code non-conformances are present. We recommend that a full structural analysis of the entire home be completed in order to develop remedial recommendations that will address the possible non-conformances.

Project Name: Buchanan Residence
Location: Nebo, North Carolina
Date: July 15, 2021
Project No. 21-753

The contents of this report are provided for the use of yourself and associated parties for this specific project and are not intended to be used as the basis for design and construction for any other project. The contents of this report shall not be utilized by any other parties unless written permission is granted by CVET. CVET disclaims all liability from the misuse or reliance, by any such parties, of the contents brought forth in this report. We appreciate the opportunity to provide professional engineering services for your project. If you have any questions regarding the contents of this report, please feel free to contact us.

Sincerely,

CATAWBA VALLEY ENGINEERING AND TESTING, P.C.

NORTH CAROLINA PROFESSIONAL SEAL 041419 ENGINEER DAVID M. LeGRAND JR.

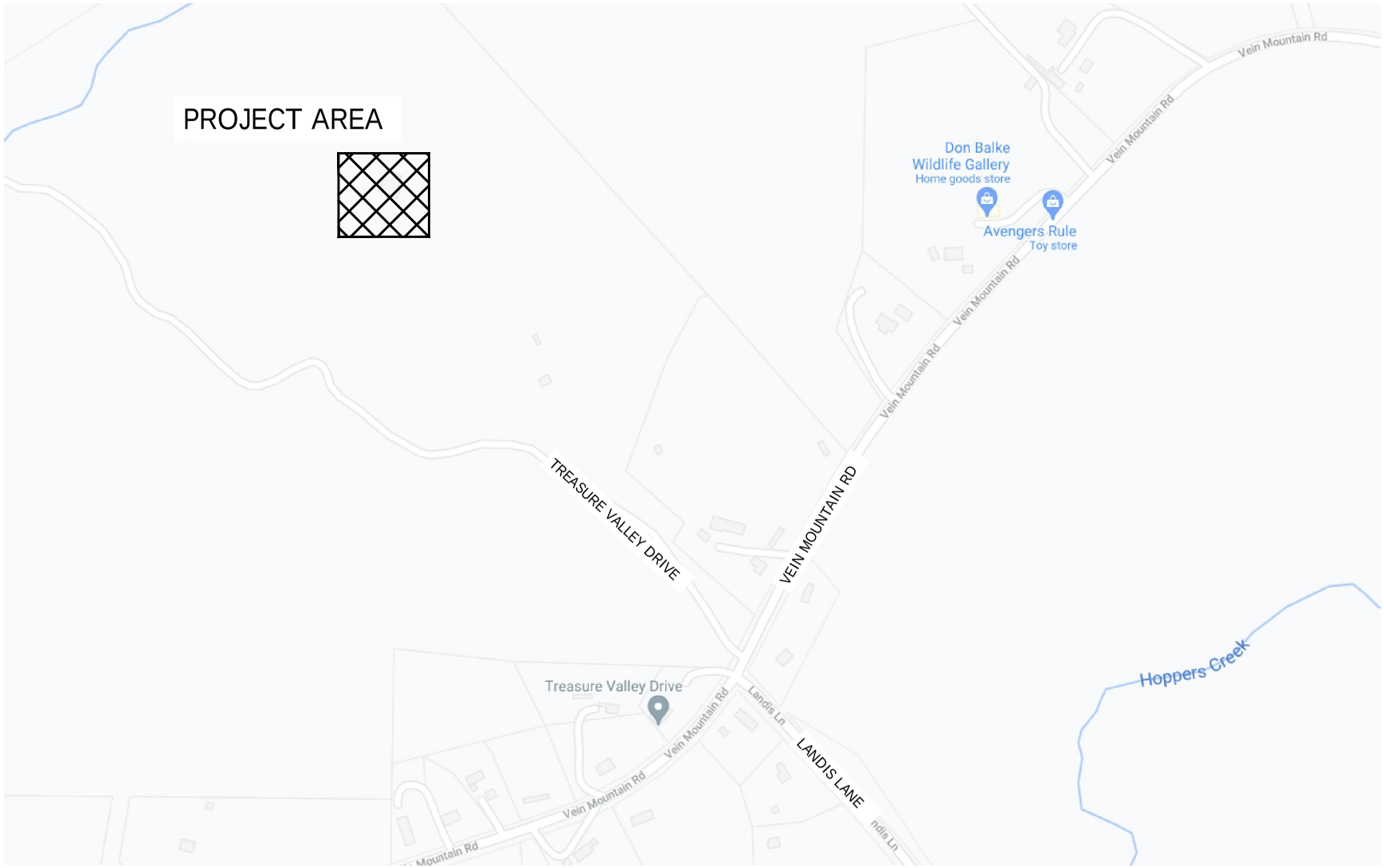
07/15/2021

Cody Dobbins, E.I.
Project Manager

David M. LeGrand, Jr., P.E.
President
NC 041419

Attachments

Figure 1: Site Map
Figure 2: Boring Locations



SITE MAP

SCHEMATIC

CATAWBA VALLEY
ENGINEERING & TESTING

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TELE: 828-578-9972

Buchanan Residence

TREASURE VALLEY DRIVE
NEBO, NORTH CAROLINA

DRAWN BY	PROJECT NO.
EMB	21–753
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07–15–21	FIG. 1

BORING LOCATIONS

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